ICMI Cyanide Code Gold Mining Certification Audit

Summary Audit Report

Detour Gold Corporation, Detour Lake Operation Ontario, Canada

Submitted to:
The International Cyanide Management Institute
1400 I Street, NW – Suite 550
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2019 Audit Cycle

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Mining Operation: Detour Lake Mine

Mine Owner: Detour Gold Corporation

Mine Operator: Detour Gold Corporation

Name of Responsible Manager: Mick McMullen, Chief Executive Officer and Director.

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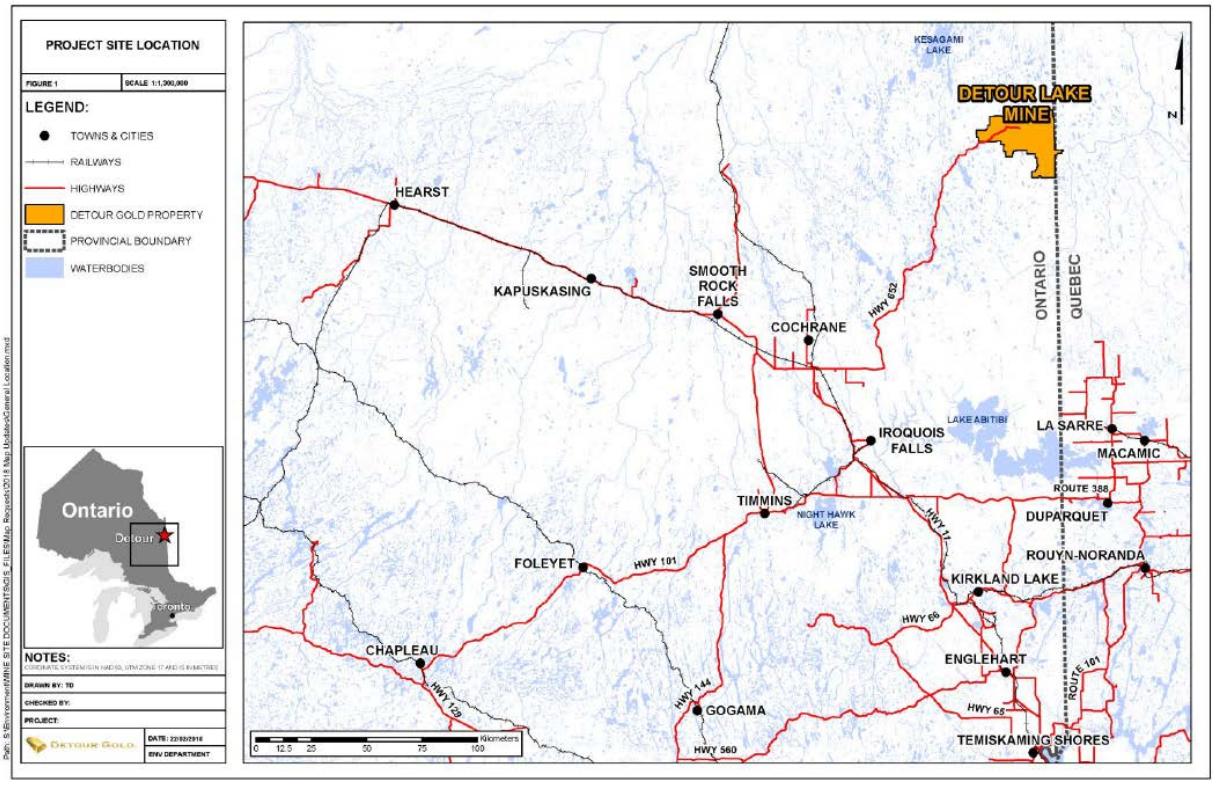
Location and description of the operation

The Detour Lake mine (Detour) location is presented in the picture below



The Detour Lake open pit mine is located in northeastern Ontario, approximately 300 kilometers northeast of Timmins and 185 kilometers by road northeast of Cochrane, within the northernmost Abitibi Greenstone Belt. The operation is situated in the area of the historic Detour Lake open pit/underground mine operated by Placer Dome which produced 1.8 million ounces of gold from 1983 to 1999. Detour Gold acquired the property in January 2007, completed a feasibility study in June 2010 and commenced gold production in February 2013. The Detour Lake operation has a mine life of approximately 22 years with an average gold production of 659,000 ounces per year, and includes the development of the West Detour project which is currently being permitted.

Cyanide is delivered at the Detour Lake mine in solid form in 20 tonne iso-containers or ISO containers. The ISO container is connected to the dilution system, where water is pumped into the ISO container to dissolve the cyanide to provide a 30% cyanide, solution which is be stored in two (2) 5.0 metres diameter x 7.5 metres high storage tanks. This reserve is equivalent to 4.5 days of consumption. The cyanide solution is fed using metering pumps directly from the storage tanks to the required points of addition. The dosage of cyanide into the leaching tanks, the first and third leach tank of each leach train, is controlled with cyanide analyzers to ensure that the required concentration is maintained. Cyanide is also used in the intensive cyanidation system and for stripping of gold from carbon. The total yearly consumption of cyanide is estimated at 0.36 kg/t or 7,140 t/a.

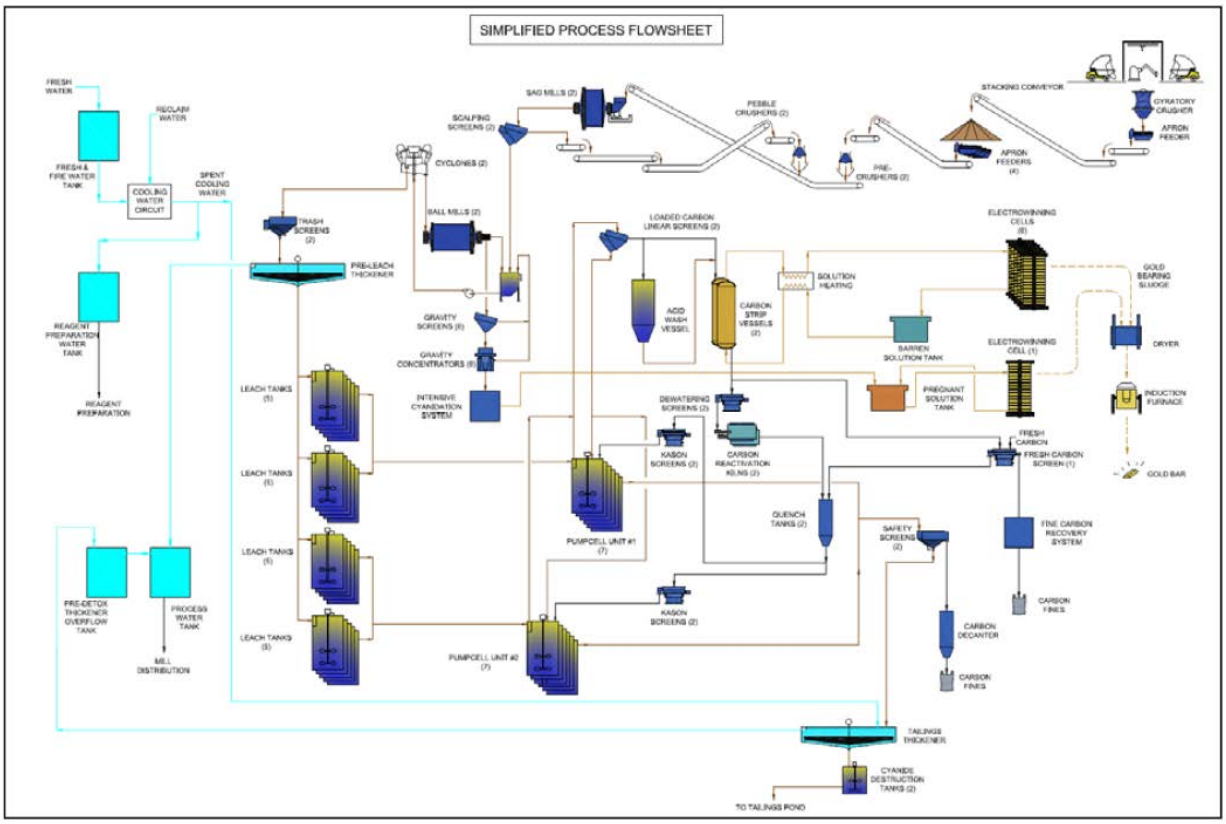
The Detour Lake comminution process is based on two parallel semi-autogenous ball mill crusher (SABC) lines, each fed from an individual reclaim tunnel. The ore is first dumped from trucks into the gyratory crusher (i.e. primary crushing), which is located approximately 450 metres northeast of the open pit mining operation. The crushed ore is conveyed to a stockpile of 12 hours live capacity (36 hours total). The stockpiled ore is reclaimed through two tunnels, one per grinding line, each having two apron feeders capable of delivering the full throughput individually. For each line, the ore is conveyed to a secondary crusher installed in open circuit and equipped with a bypass. The secondary crusher products are conveyed to the SAG (Semi-autogenous grinding) mills and processed in closed circuit with single deck screens. The screen oversize from each line is recycled to a pebble crusher and returned to the SAG mill feed. The SAG screen undersize, together with the ball mill discharge and rejects from the gravity circuits, are pumped to cyclone clusters (one per grinding line).

A portion of the ball mill product is pumped into dedicated gravity concentration circuits consisting of sizing screens and centrifugal gravity concentrators. The gravity concentrate from both lines is treated in a common intensive leach cyanidation reactor to recover the liberated coarse gold. The gold in the pregnant solution from the intensive leach reactor is recovered in a dedicated electrowinning circuit.

Cyclone overflow from the two ball mill circuits is directed to the pre-leach thickener. The thickener underflow is distributed to two (2) parallel leach trains of 10 tanks each, each leach train providing 29 hours of leaching retention time. After leaching, the gold in solution is recovered in a carrousel CIP (Carbon in Pulp) circuit, one for each parallel leach train. The loaded carbon from each CIP circuit is acid washed as required and the pregnant solution is then stripped in-line with electrowinning. After the stripping cycle the electrowinning sludge (gold) is pumped to a collection tank, then is filtered and finally the cake is dried and is ready to be mixed with fluxes and placed in the induction furnace and the gold recovered is poured as doré bars at regular intervals. The stripped carbon is regenerated and returned to the CIP circuits.

Tails from each CIP circuit are combined and sent to a pre-detox thickener to recover as much cyanide solution as is economically practical before being diluted and fed to a cyanide destruction system. The cyanide destruction system requires lime, SO2, and copper sulphate, to eliminate the cyanide in the tailings stream after the pre-detox thickener. Based on the cyanide destruction test work results the required pH in the tanks is 10. The detoxified tailings are sent to the TMA (Tailings Management Area) for settling and retention. The excess water from the TMA is reclaimed and recycled back to the processing plant.

The Detour Gold process flowsheet is presented below:


SIMPLIFIED PROCESS FLOWSHEET
FRESH WATER
RECLAIM WATER
FRESH & FIRE WATER TANK
COOLING WATER CIRCUIT
SPENT COOLING WATER
REAGENT PREPARATION WATER TANK
REAGENT PREPARATION
PRE-DETOX THICKENER OVERFLOW TANK
PROCESS WATER TANK
MILL DISTRIBUTION
TRASH SCREENS (2)
PRE-LEACH THICKENER
LEACH TANKS (5)
LEACH TANKS (5)
LEACH TANKS (5)
LEACH TANKS (5)
SCALPING SCREENS (2)
CYCLONES (2)
SAG MILLS (2)
BALL MILLS (2)
GRAVITY SCREENS (6)
GRAVITY CONCENTRATORS (6)
INTENSIVE CYANIDATION SYSTEM
PUMPCELL UNIT #1 (7)
PUMPCELL UNIT #2 (7)
PEBBLE CRUSHERS (2)
PRE-CRUSHERS (2)
STACKING CONVEYOR
GYRATORY CRUSHER
APRON FEEDER
APRON FEEDERS (4)
LOADED CARBON LINEAR SCREENS (2)
ACID WASH VESSEL
CARBON STRIP VESSELS (2)
SOLUTION HEATING
BARREN SOLUTION TANK
PREGNANT SOLUTION TANK
ELECTROWINNING CELLS (8)
ELECTROWINNING CELL (1)
GOLD BEARING SLUDGE
DRYER
INDUCTION FURNACE
GOLD BAR
DEWATERING SCREENS (2)
KASON SCREENS (2)
CARBON REACTIVATION KILNS (2)
KASON SCREENS (2)
FRESH CARBON
FRESH CARBON SCREEN (1)
QUENCH TANKS (2)
SAFETY SCREENS (2)
FINE CARBON RECOVERY SYSTEM
CARBON FINES
CARBON DECANTER
CARBON FINES
TAILINGS THICKENER
CYANIDE DESTRUCTION TANKS (2)
TO TAILINGS POND

Auditor's Finding

The ICMI-approved Audit Team verified that the Detour Lake operation is in FULL COMPLIANCE with ICMI Cyanide Code requirements for Gold Mining operations.

This operation was determined to be in FULL COMPLIANCE with the International Cyanide Management Code.

Auditor's Attestation

Audit Company:	SmartAccEss Socio Environmental Consulting, LLC
Lead Auditor:	Luis (Tito) Campos E-mail: titocampos@smartaccess.us
Mining Technical Auditor:	Adam House E-mail: ahouse@fortedynamics.com
Date(s) of Audit:	September 23rd – 27th, 2019

I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader, established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the International Cyanide Management Institute for Code Verification Auditors.

I attest that this Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the International Cyanide Management Institute for Mining Operations Verification Protocol and using standard and accepted practices for health, safety and environmental audits.

Detour Lake Mine		December 9th, 2019
Name of Operations	Signature of Lead Auditor	Date

1. PRODUCTION: Encourage responsible cyanide manufacturing by purchasing from manufacturers who operate in a safe and environmentally protective manner.

Standard of Practice

1.1 Purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide and to prevent releases of cyanide to the environment.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 1.1

Discuss the basis for this Finding/Deficiencies Identified:

The operation's contract with the cyanide producer (Chemours) requires that the cyanide be produced at a facility that has been certified as following the Code. During the certification period Detour only purchased cyanide from Cyanide Code certified producers. Detour has a master agreement with the cyanide manufacturer. The certification status of the cyanide producer was verified by review of the ICMI website.

2. TRANSPORTATION: Protect communities and the environment during cyanide transport.

Standards of Practice

2.1 Establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 2.1

Discuss the basis for the Finding/Deficiencies Identified:

Written agreements meeting the Cyanide Code's requirements were in place for the supply contract (i.e. Chemours) during this ICMC audit. The cyanide purchase contract includes the cyanide manufacturer's (seller) responsibility on delivering the product to the mine´s site.

The seller's transportation supply chain is currently certified under the Cyanide Code. The supply chain includes rail& truck transportation from Chemours' Memphis production plant to Canada.

Regarding storage and security at ports of entry, the contract includes Seller´s responsibility for interim loading, storage, unloading during shipment and unloading at the operation.

Safety and maintenance of the means of transportation throughout transport is addressed as seller's responsibility in the contracts, as well for task and safety training and emergency response for transporters and handlers throughout transport.

2.2 Require that cyanide transporters implement appropriate emergency response plans and capabilities, and employ adequate measures for cyanide management.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 2.2

Discuss the basis for the Finding/Deficiencies Identified:

The contract states the seller is responsible for all aspects of transportation of cyanide to the Detour site, as well as cyanide production. The contract commits the Seller to maintaining ICMC certification and signatory status. The cyanide transporters to Detour are certified under the Code.

All cyanide transporters to Detour are certified under the Code. The Chemours' Company, US/Canada Rail & Barge Supply Chain, Chemours Canadian Production, and Chemours Canadian Supply Chain currently supply the cyanide to the mine site. It is comprised of rail and truck movements using the Canadian National Railway and Groupe Robert Trucking from the Memphis production plant to customer location.

Chemours supplied cyanide to Detour by means of its US/Canada Rail & Barge Supply Chain comprising rail movements using the Canadian National Railway from the Memphis production plant to customer locations in US and Canada. It was first ICMC certified on August 30, 2010 and then recertified in 2013, 2016, and underwent its recertification audit prior to the August 11, 2019 deadline.

The Canada Supply Chain uses Groupe Robert trucking company to transport cyanide from Malartic, Quebec, Canada to the mine site. Robert Rolex is an ICMC certified company which was initially certified on January 29, 2013 and then recertified in 2016 and underwent recertification audit in July 2019 for inclusion in the Canada Supply Chain.

3. HANDLING AND STORAGE: Protect workers and the environment during cyanide handling and storage.

Standards of Practice

3.1 Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices and quality control and quality assurance procedures, spill prevention and spill containment measures**.**

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 3.1

Discuss the basis for this Finding/Deficiencies Identified:

Detour uses cyanide from ISO containers, which are stored in a single location inside the plant area, adjacent to the process plant building. The cyanide storage area does not have an engineered design (e.g. no roof, is outdoors,); however, Detour takes advantage of the characteristics of the ISO containers to meet the intent of the Code requirements. The cyanide mixing system, including the cyanide mixing and cyanide distribution tanks, was designed by Berlie Falco Technologies. A complete set of design drawings for the cyanide mixing system was available for review by the auditors. These drawings are properly stamped by a Certified Professional Engineer Registered in the Province of Ontario.

The field portion of the audit confirmed that the cyanide mixing area was located within the internal structure of the process plant on concrete hardstanding maintained in good condition. Cyanide mixing and distribution tanks were located within containment concrete berms. The mixing area is also subject to daily inspections at shift start to detect any obvious releases or failure in containment. This requirement of the Code was confirmed through interviews with Process personnel, review of tanks and containment volume calculations and other documentation; and field observations.

The cyanide storage area is located inside the plant area and located far away from communities and surface waters. The cyanide storage is adjacent to the process plant building, where the offices of Process personnel are located. The process plant has a HCN gas monitor equipped with visual and audible alarms at the cyanide mix area that will alert employees in case of a release of HCN gas. In addition, the standard operating procedure (SOP) PPO-SOP-1.15.3-Process Plant Access and Evacuation Check includes evacuation procedures for the process plant in cases of high concentrations of HCN gas.

Any potential spills of solid cyanide from the ISO containers in the storage area will be contained as the storage area floor is approximately 0.25 meters below outside grade. The drainage system from the plant area directs all meteoric water to the west pond and sediment pond #2, where any cyanide solution spill would be collected and pumped back to the process. These ponds represents an additional contingency measure in addition to the existing secondary containment systems of the process plant facilities. In case cyanide solution overflows outside of the plant containment systems due to an upset condition, it would be captured at these two ponds.

The unloading area for ISO containers is located next to the storage area. The area where the trucks park to deliver the ISO containers does not have a concrete pad, however it drains towards the storage area. Any potential spills of solid cyanide from the ISO containers during unloading

will be contained as the storage area floor is approximately 0.25 meters below outside grade. It is the auditor's professional opinion that this design and layout allows to contain, recover or remediate of any potential leakage during unloading.

Detour has a preparation area for cyanide that includes a mixing tank and a distribution tank. There are level indicators and high-level alarms installed on both tanks. These levels are continuously monitored from the control room and can also be monitored at the cyanide mix area through the HMI (Human Machine Interface). In addition, there are audible and visible alarms at the tanks. No failures of the level indicators were reported in the period prior to the audit. The auditors observed screenshots of HMI showing that the level indicators were functioning correctly.

Cyanide mixing and distribution tanks are secured to solid, reinforced concrete pedestal-type foundations and are contained within concrete berms with good condition concrete flooring. The containment volume is not the recommended 110% of the largest tank; it is approximately 35% of the required volume. The remainder of the containment is provided within the gold recovery ground floor area. In addition, there is a sump that collects any fluids in the area and pumps it to final tails.

The cyanide storage is located in an outdoor area in the north-west corner adjacent to the process plant building. As such, it has adequate ventilation and build-up of hydrogen cyanide gas is unlikely to occur. It does not have a roof; however, the site uses the characteristics of the ISO containers to meet the intent of the Code requirements. The risk of potential contact with meteoric water is very low. The cyanide storage area is fenced and secured with a lock. Access to the cyanide storage area is restricted. Warning signage is posted in the fence. The storage area is dedicated to sodium cyanide storage only, with no other materials permitted to be stored.

The cyanide mixing and distribution tanks are located in a corner of the plant area, next to the cyanide storage area, and has appropriate ventilation to prevent build-up of hydrogen cyanide gas. These tanks are located within the plant building and has restricted public access. The area can only be accessed with presence of security personnel. The cyanide mixing and distribution tanks are stored within a dedicated separate containment area, within concrete berms, with no other materials permitted to be stored.

3.2 Operate unloading, storage and mixing facilities using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 3.2

Discuss the basis for this Finding/Deficiencies Identified:

The empty ISO containers are returned to the storage area, placed in the section of empty ISO containers, labelled accordingly, and then removed from site and shipped back to the vendor. The ISO containers are rinsed on the outside with fresh water prior to removing it from the cyanide secondary containment mixing area. To ensure that the ISO containers are empty before returning them to the vendor, Detour has implemented a procedure to triple air flush the ISO container as per PPO-SOP-10.1.6-Mixing Sodium Cyanide. Procedure PPO-SOP-10.15.1-Cyanide Isotainer Delivery Off Load and Change Out indicates that the external shell of the ISO container needs to be thoroughly washed with fresh water to remove any dust and contaminants prior to moving the ISO container outside of the cyanide mixing containment area.

Detour has PPO-SOP-10.1.6-Mixing Sodium Cyanide that outlines the requirements for inspection, observation and mixing of cyanide solutions; as well as the operation and function of valves, pumps and various interlocks within the cyanide mixing process. It also includes instructions for the prefill of the cyanide mixing tank with reclaim water and caustic solution. This procedure also requires that any cyanide spill or cyanide on the ISO container must be hosed to the sump using fresh water.

The Mixing Sodium Cyanide procedure requires operators to use the appropriate personal protective equipment (PPE) during mixing activities. These include steel-toed boots, rubber gloves, rubber boots, approved respirator, face shield, chemical suit with hood, hardhat, safety glasses, hearing protection and a personal HCN gas badge. PPO-SOP-10.37.1-Surveillance of Cyanide Containment Area requires that security personnel checks that the correct PPE is in place prior to starting the mixing activities and observes all the activities until they are completed. In addition, video monitors are in place to monitor cyanide mixing activities at all times. These requirements were verified by the auditors in the field by observing a cyanide mixing event.

Procedure PPO-SOP-10.15.1-Cyanide Isotainer Delivery Off Load and Change Out indicates that the cyanide ISO containers are handled using a sea-can handler crane, either to place them within the storage area or in the self-propelled cart via rail that will move the ISO container into the cyanide mixing area. This procedure also indicates that ISO containers shall not be stacked more than 2 high at a time and to do not stack full ISO containers on top of empty ones. The cyanide briquettes inside the ISO container already comes with red colorant. Detour requested Chemours to add colorant to the cyanide.

A cyanide mixing event was observed during the audit. The review indicated that Detour has appropriate SOPs and practices to handle and prepare cyanide solutions in a safe manner.

4. OPERATIONS Manage cyanide process solutions and waste streams to protect human health and the environment.

Standards of Practice

4.1 Implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventive maintenance procedures.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 4.1

Discuss the basis for the Finding/Deficiencies Identified:

Detour has several documents including, a manual and SOPs, for the safe operation of cyanide facilities. All SOPs include a section related to PPE requirements and considerations of safety hazards. The operation has identified equipment, personnel, and procedures for cyanide unloading and mixing activities as well as for storage facilities, processing facilities, TMA (Tailing Management Area) and all associated piping and pumps as having contact with cyanide. SOPs were reviewed and found to be sufficiently detailed to enable safe operation.

Detour has manuals and procedures that identify the assumption and parameters for the safe operation of the facilities. The Operational Maintenance and Surveillance Management (OMS) – Water and Tailings Management Manual considers an Environmental Design Flood (EDF) event of 431 mm of direct precipitation in TMA Cell 1, corresponding to a spring run-off event of duration 30 days and frequency 1:100 years. Maximum operating water level in the TMA is 0.5 m below the spillway to ensure the EDF can be contained. Historic freeboard data (2013 – 2019) was reviewed by the auditors and evidenced that at all times the pond elevation maintained at least the required freeboard. This was also evidenced by the auditors during the field visit to the TMA.

The OMS Manual also includes a current operating target of 35 ppm weak acid dissociable (WAD) cyanide when leaving the detox system. This target is reviewed on a continuous basis based on the water quality observed in the pond to maintain a concentration that is not toxic to avian and terrestrial wildlife that could come in contact with the pond water for a short period of exposure. The OMS Manual also includes a maximum CN-WAD concentration of 50 mg/l at the tailings decant pond. Detour does not have direct water discharges to surface water that have been treated for cyanide.

The Operational Maintenance and Surveillance Management (OMS) – Water and Tailings Management Manual includes a list of critical aspects and areas to be inspected and inspection frequencies. At the TMA, Detour conducts inspections for covers on the tailings pipeline corridor, emergency spillway basin status (which is an emergency pond close to a water course), conductivity probes to detect leaks from tailings pipelines, seepage ponds and pumps, wildlife mortalities, erosion on TMA dam walls, freeboard, additional seepage that could appear at the toe of the TMA dams, spillway, among others. In the case of the process plant, process shift inspections includes: grinding circuit, CIP, leach tanks area, lime area, TMA, lead nitrate, reagent storage area, cyanide ISO container and equipment, SO2 off-load, safety and trash screens, secondary crusher and elution area, secondary containment conditions at the leach tanks and detox areas, among others.

Detour has developed and implemented a management of change (MOC) process (Procedure MSP-1020) for operational changes in the plant to ensure that a systematic process is followed to evaluate changes at process facilities so that potential negative impacts to health and safety of employees and the environment are minimized. The MOC process is to be used to evaluate

proposed changes to: equipment, materials, processes, systems and work management procedures. The MOC uses a format that includes a description of the proposed change, a risk assessment section, review, evaluation and approval.

Detour has implemented contingency procedures for the process plant and tailings facility to respond to upsets in water balance, problems identified by inspections, and to address temporary shutdowns of the facilities. Procedures include step-by-step measures for stopping and starting the plant facilities, events of a power outage, provide response measures for emergencies related to failures of cyanide equipment, and response plans to address upsets in the process water balance. Contingency scenarios are included in the OMS Manual and SOPs. The OMS also includes activities related to surveillance of the tailings corridor and actions to be taken in case of a tailings line rupture. Detour has implemented an emergency pond close to a natural water course to contain any leakage from the upper portion of the tailings pipeline. The lower portion will flow into the secondary containment of the process plant, which can also contain any potential spill from the process tanks. SOP Managing of High CN WAD in Detox Discharge (PPO-SOP-11.3.3) includes procedure to follow when there is high cyanide levels in the detox discharge. In relation to a temporary closure or cessation of operations scenario, Detour is currently constructing a Mine water pond in the future location of TMA Cell 3 to provide flexibility in water balance as the tailings deposition transitions from Cell 1 into Cell 2. This pond will also be used to manage the water balance and maintain the required freeboard in cases of temporary cessation of operations.

Detour has a program to conduct inspections of cyanide facilities with frequencies that varies from daily, weekly, monthly and annually. The OMS Manual for the TMA include a list of critical aspects and areas to be inspected and inspection frequencies. These inspections are conducted by different areas (e.g. Process, Environmental, and Capital Projects) and frequencies varies from every shift to weekly, monthly and annually. The inspection program of cyanide facilities including unloading, mixing and storage activities and frequency of inspections were found to be sufficient to assure that the operation is safe and functioning within design parameters. The auditor reviewed inspections records and verified that inspections are conducted on a consistent manner.

The auditors conducted a field inspection during the site visit and verified the condition of tanks, secondary containments, pipelines, pumps, valves, tailings pipeline corridor, tailings freeboard, and the presence of salts. These inspections also included cyanide unloading, mixing and storage facilities. The auditors reviewed inspections records and verified that inspections to cyanide facilities are conducted on a consistent manner. The inspections are documented and include date of the inspection, the name of the inspector and observed deficiencies.

Detour uses two mechanisms to document, track and close corrective actions identified during inspections: Corrective actions that are related to maintenance of equipment at the process plants and TMA are managed by the Maintenance area. These corrective actions are managed using SAP system, where work orders are tracked, prioritized, planned and closed. All other corrective actions not related to maintenance of equipment that are identified through inspections conducted by process personnel or other areas (e.g. Environment) are tracked, implemented

and followed up until closure. The auditors reviewed examples of items identified during inspections and records of the implementation of the corrective actions until they were closed.

The Maintenance area has a preventive maintenance program for pumps, pipelines, valves, flow meters, gauges, level sensors, pH meters, sump pumps, filters, HCN sensors, tanks, seepage ponds, and cyanide facilities in general. The preventive maintenance program helps perform periodic maintenance and inspections of the integrity of process equipment, piping and tanks to ensure they are working properly. A corrective action maintenance schedule is also generated every week. Examples of corrective action records were reviewed and followed up to ensure they are being closed according to schedule.

Detour has four emergency power generators: Two 4160-volt (V) backup generators for larger equipment at the process plant (2 megawatt (MW) each of them); and, two 600V backup generators (1.5MW each of them). These four generators will start automatically as soon as there is a power outage and covers non-production equipment such as pumps, tank agitators, sumps, tailing pumps, fire alarm panels, evacuation alarms, HCN monitors, among others. In addition, 8 small portable generators are in standby for transportation to the TMA seepage locations (6 in total). Detour provided examples of preventive maintenance records for the backup power generators. A review of these records confirmed that the generators are checked on a monthly basis for fuel level, lighting, heating and are also start tested. In addition, mock power outages are conducted every 6 months to test the backup generators.

4.2 Introduce management and operating systems to minimize cyanide use, thereby limiting concentrations of cyanide in mill tailings.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 4.2

Discuss the basis for this Finding/Deficiencies Identified:

Detour conducts programs to determine the appropriate cyanide addition rates in the process plant and adjust addition rates as necessary. In 2016, Detour initiated lab tests onsite with samples of the cyanide circuit to explore leaching reactions with various parameters including grind size, density, pH, dissolved oxygen (DO) and cyanide. The effect of cyanide was measured related to gold extraction. Detour designed an optimization experiment using different levels of cyanide that varied from 95 to 170 ppm WAD cyanide. As a result, Detour concluded that the optimal set point of cyanide at the plant was between 125 and 140 ppm WAD cyanide, where 125 ppm is the optimal value; however 140 ppm is the concentration currently being used as a safety buffer.

In 2017, Detour continued with these lab tests including lead nitrate (PbNO3) and using uncontrolled variables (e.g. grind size) and controlled variables (e.g. cyanide, DO and lead nitrate) and measured the results. The results indicated that the use of additional lead nitrate can

increase the extraction rate and therefore less cyanide can be used. These lab results justified the need to use lead nitrate onsite and start adding it to the process circuit.

Plant trials were started with 3 levels of WAD cyanide (180,150 and 130 ppm) and constant lead nitrate (0.75 g/t) to evaluate if there was any additional extraction at 180 ppm WAD cyanide. The results indicated that there were no significant difference in extraction rates between the three cyanide concentrations and that the optimum levels are 130 ppm WAD cyanide and 0.75 g/t lead nitrate.

Detour evaluated various control strategies for cyanide addition. The basic control strategy is the feed tonnage controller. The control input for every ton of ore is a fixed set point of cyanide addition (0.35 kg of cyanide / ton of ore). TAC analyzers (Titration Automated Controllers) were installed in June 2014 and switched the control strategy to having free cyanide in the Leach Tank #1; and, through a control, cyanide addition is either increased or decreased using the feed tonnage controller. There are two TAC analyzers that analyses cyanide concentrations every 30 minutes per train of tanks (e.g. every hour each train).

In 2015, Detour explored an additional control strategy by adding cyanide at Leach Tanks #1, # 2 and #3 with the intention to keep the free cyanide concentration constant. The conclusion was that staged cyanide in Leach Tanks #1, #2 and #3 increased cyanide consumption and costs, achieving a similar gold leach extraction rate. Another conclusion was that adding a small quantity of cyanide at the end (Leach Tank #5) helped control de cyanide/copper ratio in the CIP circuit.

Currently, cyanide is added at Leach Tank #1 for each of the four leach trains. There is also the capacity to add cyanide to Leach Tanks #2, #3 and #5; although #2 and #3 are not used consistently. Cyanide is also added at the barren solution tank and at the Intensive Cyanidation Solution tank. There is also a cyanide addition line at the Cold Strip tank, however it is not being used. There are cyanide addition lines at the Cyclone feed pump Box #1 and #2, however they are not used and will be decommissioned.

Detour uses the controls mentioned above (i.e. feed tonnage, cyanide concentration controller), one on top of the other. Results from the daily cyanide concentration analyses are continuously used to control cyanide addition rates. The results are reviewed and, if changes are needed, they occur automatically. If for any reason the TAC analyzer is down, the operators conducts titration twice a shift, and the operation will revert to the feed tonnage control until the TAC analyzer is back on track.

4.3 Implement a comprehensive water management program to protect against unintentional releases.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 4.3

Discuss the basis for the Finding/Deficiencies Identified:

Detour uses a comprehensive, probabilistic water balance using the Monte Carlo simulation software, Goldsim. This model is used for estimation of short term projects, continuing operations at the process plan, and also for mine closure. An external consulting company (BGC Engineering Inc) updates climate data on a monthly basis and calibrates the model twice a year. Detour has been using this model since 2016.

The water balance includes the following factors: solution application rates; tailings deposition rates; precipitation, evaporation and seepage rates; undiverted run-on from upgradient areas; and impacts of freezing and thawing. Potential power outages is not included in the water balance as Detour have emergency backup generators on site which will avoid any effects on water balance activities. Detour has zero process water discharges to surface waters. A description of the water balance model and calculations is included in the Goldsim Water Balance and Water Quality Model, dated December 2016.

Detour conducts frequent inspections to the TMA and monitoring activities to ensure these facilities are operated according to the design criteria, following the inspection program included in the OMS manual. Process operators conduct daily inspections on the TMA, including conditions of dams and seepage ponds. The auditors reviewed inspections records and verified that inspections to the TMA facilities are conducted on a consistent manner.

Freeboard in the TMA is surveyed on a monthly basis. The auditors reviewed historic data since 2013 and verified that 0.5 meters of freeboard was maintained at all times. During the field visit, the auditors verified that the current freeboard was approximately 6 meters. A bathymetric survey is conducted twice a year at the TMA pond, to evaluate consolidation of the tailings. The engineer of record also conducts an annual inspection of the TMA. The maximum operating water level is set at 0.5 m below spillway to ensure the environmental design storm (EDF) can be contained with no discharge through the spillway. The auditors reviewed historic data since 2013 and verified that 0.5 meters of freeboard was maintained at all times. During the field visit, the auditors verified that the current freeboard was approximately 6 meters.

Detour has a weather station on site that collects precipitation data on a daily basis. This weather station has been in operation since 2012. Data collected is used to compare the results to design assumptions and to calibrate the water balance model. The water balance model is updated and calibrated every six months using precipitation, decant pond levels and temperature data, as mentioned in the Goldsim Water Balance and Water Quality Model, dated December 2016. Detour is a fairly young operation and the water balance model has not indicated any need to revise the design assumptions or operating practices. Current on-site measurements correlate well with the initial assumptions of the water balance. The water balance projections are revised as necessary based on actual data.

4.4 Implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 4.4

Discuss the basis for the Finding/Deficiencies Identified:

Detour does not operate the TMA or other areas of open waters with WAD cyanide concentrations above 50 mg/l. The tailings impoundment supernatant pond is maintained well below the 50 mg/l WAD cyanide. The OMS Manual indicates a maximum WAD cyanide concentration criteria of 50 mg/l at the tailings decant pond. In addition, the OMS Manual specifies an operating target of 35 mg/l WAD cyanide in the tailings leaving the detox system. The auditors reviewed daily WAD cyanide concentrations in tailings leaving the detox system between January 2018 and January 2019 and identified that 35% of the time the values were above 35mg/l. As mentioned by process personnel interviewed, the cyanide levels in the tails continue to decrease throughout its transit in the pipeline corridor until it actually discharges in the TMA.

Detour has implemented electronic propane gas cannons to be used during the summer season to scare away birds and other wildlife getting too close to the TMA. No cyanide-related wildlife mortalities have occurred since the startup of Detour operations.

Water quality at the decant pond is monitored on a monthly basis for WAD cyanide. A review of monitoring results of the TMA decant solution between 2013 and 2019 indicated a maximum WAD cyanide concentration of 42.77 mg/l (one-off event) and an average of 3.3 mg/l. There has been no wildlife mortalities related to cyanide management in the TMA facilities. Considering the low WAD cyanide concentrations in the TMA, formal inspections for wildlife mortalities are conducted on a weekly basis. Detour does not maintain a specific wildlife mortalities register, but does have individual reports on wildlife mortalities. The auditors sampled the individual wildlife mortalities reports and there was no mortalities related to cyanide.

4.5 Implement measures to protect fish and wildlife from direct and indirect discharges of cyanide process solutions to surface water.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 4.5

Discuss the basis for the Finding/Deficiencies Identified:

Detour does not have direct discharges to surface water from cyanide facilities. Current water treatment facilities at Detour are related to pit dewatering.

The drainage system from the plant area directs all meteoric water to the west pond and sediment pond #2, where any cyanide solution spill would be collected and pumped back to the process.

Prior to discharge water from these ponds, water quality is analyzed for a series of parameters, including total cyanide and free cyanide. No cyanide values have been detected at these ponds.

The design of the TMA did not consider a liner at the bottom of the facility. The TMA is designed to seep water through the toe of the dams. Seepage from the TMA is collected and contained in ponds and pumped back to the decant pond. There are 6 seepage ponds in total around the TMA Cell 1 dams. Water quality data from these 6 seepage ponds is monitored to detect presence of cyanide.

There are eight surface water monitoring stations downgradient of the TMA. Monitoring results for these stations are reported to the government. Detour detected traces of some parameters associates with tailings such as cobalt and free cyanide (0.005 mg/l) in monitoring station ERC4. To control this, trenches and collection systems where implemented to pump back any potential seepage and control the water quality at ERC4. The auditors reviewed monitoring data since 2011 for ERC4. Maximum free cyanide value reported was 0.015 mg/l in March 2019, which is below the 0.022 mg/l free cyanide value of the Code. Detour will continue monitoring these stations to characterize the behavior of the plume and implement controls as necessary to prevent negative impacts to surface waters.

4.6 Implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of ground water.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 4.6

Discuss the basis for the Finding/Deficiencies Identified:

The main facility that may contribute to seepage is the TMA. The TMA is unlined and was designed and constructed to be a flow through facility. There are 6 seepage collection ponds around the TMA that collect and pump seepage water back to the decant pond. In addition, there is a groundwater monitoring network (16 stations) around the TMA. Each station has both a deep and a shallow well (32 wells in total).

Monitoring well MW11-07, which is located in the same areas as surface water station ERC4 discussed above in 4.5, reported a maximum of 0.0188 mg/l free cyanide in 2018. The values in 2019 have decrease as a result of the additional controls implemented for ERC4. Wad cyanide was reported at 0.004 mg/L in 2018.

Monitoring well MW11-23 reported cyanide traces (WAD cyanide below 0.05 mg/L). Additional wells have been installed and a study is underway to better understand the extent of the plume and install a pump back station. In addition, monitoring wells MW92.4 and MW13-18 (both of them are in the same location) also show some cyanide traces, which are assumed to be influenced by legacy operations of the previous owner of the mine.

The process plant is designed and operated to manage seepage and protect groundwater quality. The entire process area, including the cyanide mixing area, is contained within a reinforced concrete pad surrounded by curbs, parapets and stem walls, which provide a competent barrier to seepage. The concrete floor is sloped to drain solution into common sumps and then pump the solution back into the process circuit. All process tanks at the plant are secured to solid, reinforced concrete pedestal-type foundations and are contained within concrete berms with good condition concrete flooring. This foundation and floor system serves to prevent any seepage from the tank bottoms from entering the ground.

The Canadian government has not established a WAD cyanide standard in groundwater. In addition, groundwater in the area does not have a defined beneficial use as there are no communities located closer to the mine. Detour has implemented an adaptive management approach for groundwater. Anytime a parameter is above 10 times the provincial water quality objective (PWQO), an investigation is initiated to determine additional mitigation measures. The PWQO for free cyanide in surface water is 0.005 mg/L. Groundwater monitoring reports are submitted annually by March to the government, including the wells around the TMA. The auditors reviewed the 2018 report and cyanide concentrations in groundwater, which are below 0.022 mg/L free cyanide.

4.7 Provide spill prevention or containment measures for process tanks and pipelines.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 4.7

Discuss the basis for the Finding/Deficiencies Identified:

Spill prevention and containment measures are provided for cyanide mixing, distribution, and process solution tanks. The cyanide mixing and distribution tanks, barren tank, Intensive Leach Reactor (ILR) tank, CIP tanks, leach tanks, pre-detox thickener tanks and detox tanks are all within an interconnected concrete secondary containment which is in good condition and provides a large containment area. The entire process area is contained within a concrete pad surrounded by curbs and walls, providing a competent barrier to seepage. The concrete floor is sloped to drain to concrete trench drains, where any spills will be pumped back to the process.

Secondary containments for cyanide unloading, storage, mixing and process tanks are, in general, sized to hold a volume greater than that of the largest tank within the containment (i.e. 110%) and piping draining back to the tank with additional capacity for the design storm event. All secondary containments are connected to provide a larger containment capacity for process solution within the process plant, especially for those tanks that do not have a secondary containment capacity to contain 110% of the volume, such as the cyanide mixing and distribution tanks, the Barren tank and Detox tanks.

Secondary containments for tanks containing cyanide solution are also inspected every shift for integrity and capacity. The two pre-detox thickener tanks are located outdoors, but drain to

additional containment areas beneath them, in the basement of the process plant building. The detox tanks also are located outdoors, but the secondary containment is connected to the process plant secondary containment.

The cyanide mixing and distribution tanks are located within a bermed concrete impoundment, which were observed to be of sound integrity and considered suitable for containment in the event of a release or tank failure. The containment area has a sump pump to transfer any solution to final tails. The berms and containment areas are also subject to daily inspections at the beginning of each shift.

The entire process area is contained within a concrete pad surrounded by curbs and walls, providing a competent barrier to seepage. The concrete floor is sloped to drain to concrete trench drains, where any spills or rainwater will be pumped back to the process. The auditor observed that the secondary containments were maintained empty, with no materials stored inside them.

Detour has dedicated pumps within secondary containment collection areas that remove solutions and return them into the process circuit. The automatic pumps are part of the defined preventive maintenance program. There is no discharge of cyanide-containing water from the secondary containment areas as the secondary containments are not designed to discharge into the environment. As stated in the Code, no specific written procedures are necessary as the containment systems have sumps and dedicated pumps and piping to return solutions to the production process.

Detour has implemented spill control and/or containment measures for cyanide process solution pipelines to collect leaks and prevent releases to the environment. All cyanide pipelines at Detour are located within a secondary containment provided for at the process plant. No pipelines are located outside of containment. There are no buried pipelines. Cyanide pipelines are inspected daily as part of the routine inspections by plant personnel. The cyanide mixing and distribution tanks have level indicators and high-level alarms installed on both tanks. The level indicators in the cyanide mixing area are continuously monitored to ensure they are operational. The system has interlock valves that shuts down the pumps automatically if there is a loss of signal between the probe and the PLC (Programming Logic Control). In addition, the secondary containment has an epoxy seal to improve impermeability of the secondary containment.

At the tailings pipeline corridor, Detour has implemented an emergency pond close to a natural water course to contain any leakage from the upper portion of the tailings pipeline. The lower portion will flow into the secondary containment of the process plant, which can also contain any potential spill from the process tanks. In addition, the pipelines in the tailings corridor are covered with plastic liners to prevent any high pressure releases outside of containment and has implemented conductivity probes to check if there is any tailings leaks below the covers. Five video cameras have been installed along the tailings pipeline corridor and are checked by a security guard every 30 minutes.

At Detour there is only one pipeline that could pose a risk to surface water and is the tailings pipeline corridor that crosses Easter creek. The tailing pipeline has a cover on top to prevent any eventual spraying outside the containment area. It also has conductivity probes to check if there

is any tailings leakage below the covers. An emergency pond was implemented close to the creek to direct any potential spill from the upper part of the tailings containment area (canal) and avoid impact to surface waters. The emergency pond has two pumps to evacuate any water collected in the ponds. As indicated by Detour, this pond has not received water since it was constructed. The pumps at the emergency pond are included in daily inspections conducted by process personnel.

All cyanide tanks and pipelines at the Detour process plant and TMA are constructed with materials compatible with cyanide and high pH conditions. They are made of carbon steel, stainless steel, HDPE or other materials compatible with cyanide. Material specifications and construction material testing records for all cyanide-containing equipment were found in compliance.

4.8 Implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 4.8

Describe the basis for the Finding/Deficiencies Identified:

Detour process plant facilities were constructed by AMEC. Quality control and quality assurance (QA/QC) programs have been implemented during the initial construction of cyanide facilities at Detour; however, the complete records of the QA/QC reports were not available to review by the auditor during the site visit. Site personnel interviewed during the audit indicated that they were present during construction of the facilities and stated that a QA/QC program was followed, however, there was no evidence to back up this statement.

QA/QC records were available for the cyanide mixing and distribution area. The cyanide mixing system, including a cyanide mixing and cyanide distribution tanks, was designed by Berlie Falco Technologies. A complete set of design drawings for the cyanide mixing system was available for review by the auditors. These drawings are properly stamped by a Certified Professional Engineer Registered in the Province of Ontario. No additional QA/QC records were available during the audit for the rest of the cyanide facilities including the process plant, tailings pipeline corridor and the TMA area.

In order to be in compliance with the requirements of the Code, Detour has provided an alternate demonstration of QA/QC programs. As Detour was not able to provide evidence of the QA/QC activities conducted during constructor of cyanide facilities, nor as-built certifications for cyanide constructions, consultant Porcupine Engineering Services (PES) was retained to conduct a review of cyanide facilities and issued a report that would provide assurance that the continued operations within established parameters will provide protection against cyanide exposures and releases.

Detour provided to the auditors the report "Cyanide Unloading/Distribution and Related Facilities" report developed by PES, dated October 2018, which addressed the suitability of materials and adequacy of soil compaction for earthworks, such as tank foundations and earthen liners, and for construction of cyanide storage and process tanks.

The PES report includes QA/QC programs conducted by EXP/TBT Engineering for suitability of materials and soil compaction for earthworks at the detox tanks. The report also includes as an appendix three reports developed by Golder Associates: "Geotechnical Investigation for the Plant, Accommodation Complex and Airstrips Areas", dated, May 2009; "Complementary Geotechnical Investigation for the Plant Site", dated Feb 2010; and "Complementary Geotechnical Investigation for the Plant Site", dated January 2011.

The conclusions and recommendations of the PES report are:

- In general the tanks containing cyanide solution and foundations/containment areas are generally in good condition with no obvious signs of distress except for localized areas such as pin holes in various CIP tank shells. In addition the entire mill process building ground floor is approximately 250mm below outside grade, effectively making the entire mill a containment area.
- Drawings of the foundations and major process vessels bear the seal of a Professional Engineer Registered in the Province of Ontario.
- A quality control/quality assurance program should also be implemented such as periodic Non Destructive Testing (NDT) of tanks and vessels containing cyanide, especially in high wear areas such as suction and feed nozzles. Inspection of cyanide piping and containment areas should be undertaken as well.

In terms of the recommendation in the PES report related to Non Destructive Testing (NDT) of tanks and vessels containing cyanide, Detour started in 2019 a program to conduct non-destructive tests to tanks and pipelines. The plan is to conduct NDT to all 53 existing cyanide tanks prior to their initial 10 years of life (Detour operations started in 2013). After that, the NDT will be conducted every 3 years.

In the case the TMA facility, the Code requires an evaluation of dam stability as an alternative engineering review of tailings storage facilities. The auditors reviewed the report "Detour Lake Mine TMA Cell 1 Dam Safety Review", developed by Golder Associates, dated April 2016. The purpose of the report is to confirm that the existing dams are safe, and are being operated and maintained in safe manner and that there is a surveillance program that is capable of detecting unsatisfactory or potentially unsafe conditions. The report concludes that the dams are being maintained and that the site is being operated in a safe manner in accordance with the existing protocols.

It is the professional opinion of the auditors that the alternative evidences presented by Detour complies with the requirements of Standard of Practice 4.8 of the Code.

4.9 Implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and ground water quality.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 4.9

Describe the basis for the Finding/Deficiencies Identified:

Detour has the procedure ENV-SOP-05-Surface and Ground Water Sampling Procedure that addresses monitoring requirements related to surface water and groundwater including responsibilities; equipment; field notebook to report field data (i.e. pH, conductivity, temperature and dissolved oxygen); surface/groundwater pre-sampling procedures (i.e. labels, preservatives, field instrument calibration); sampling procedures (i.e. field parameters); post-sampling procedures (i.e. filtration, preservation), quality assurance/quality control (i.e. duplicate, field blanks, travel blanks, trip spikes), sample storage (i.e. maximum holding times for samples); training requirements; and, chain of custody and shipping. The procedure include a section specifically for cyanide sampling procedures and provides details on how to take samples in cases where the monitoring stations have historically presented high concentration of sulfates, which could interfere with cyanide lab analysis.

The surface and groundwater sampling procedure was developed internally by qualified personnel of Detour's environmental department. Staff in charge of preparing the sampling procedure are suitably qualified, with more than 20 years of experience in environmental management in mining activities. The surface and groundwater sampling procedure includes protocols on how and where the samples should be taken, preservation techniques, equipment calibration, quality control, chain of custody procedures, shipping instructions, and cyanide species to be analyzed.

Detour field data sheets for surface and groundwater samples record in writing the weather conditions, ambient temperature, field parameters (i.e. conductivity, pH, temperature, DO), groundwater levels and quantity of water to purge. During sampling, pictures are taken for each location visited. Completed monitoring field forms were reviewed by the auditor and verified that these conditions are being registered.

Detour does not have discharges of process water to surface water from cyanide facilities. Detour monitors cyanide species (WAD cyanide, Total cyanide) on a quarterly basis for both surface water and groundwater stations downgradient of the TMA and seepage ponds pump back systems. There are eight surface water monitoring stations downgradient of the TMA and a groundwater monitoring network (16 stations) around the TMA. Each station has both a deep and a shallow well (32 wells in total). As mentioned in 4.5 and 4.6 above, traces of cyanide concentrations in surface and groundwater have been detected at some monitoring stations, but in concentrations below the 0.022 mg/l free cyanide value mentioned in the Code.

Detour has been successful at preventing wildlife mortalities related to cyanide facilities since the beginning of its operations in 2013. The WAD cyanide values in the TMA are well below the

recommended value of 50 mg/l. Considering the low WAD cyanide concentrations in the TMA, formal inspections for wildlife mortalities are conducted on a weekly basis. Detour does not maintain a specific wildlife mortalities register, but do have individual reports on wildlife mortalities. The auditors sampled the individual wildlife mortalities reports and there was no mortalities related to cyanide.

The monitoring schedule includes frequencies for samples that varies between weekly, monthly, quarterly and biannually. The frequencies have been defined based on local regulations and permits requirements. Records were available and reviewed by the auditor for sampling and monitoring activities. The frequencies of the monitoring activities were deemed to be appropriate by the auditor.

5. DECOMMISSIONING: Protect communities and the environment from cyanide through development and implementation of decommissioning plans for cyanide facilities.

Standards of Practice

5.1 Plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 5.1

Describe the basis for the Finding/Deficiencies Identified:

Detour has an approved Closure Plan dated 2016. An updated version of the Closure Plan have been submitted in 2019 and is in the process of being approved. While the 2016 version does not include requirements of the Cyanide Code, the 2019 version does include these requirements, as well as references on decommissioning activities that will be conducted. The current life of mine is until 2038.

Detour has developed a conceptual plan for Decommissioning of Cyanide Facilities, dated January 2019, that describes the procedures to decommission cyanide facilities at the cessation of operations. This plan has been developed internally, led by the Environmental department with support from other functions of the operation, and includes activities such as decontamination of equipment, removal of residual cyanide reagents and management of surface water. This plan is an appendix of the 2019 closure plan submitted to the authorities for approval. The plan considers that decontamination activities will be conducted in accordance with the SOPs for Cyanide Equipment Decontamination.

SRK Technical Memorandum dated January 2019 “Detour Lake Mine Buildings Demolition Cost Estimate 2018 Update” includes demolition and decontamination cost estimates for tanks, pipes,

pumps, tailings pipelines, water pumping costs, among others. Decommissioning activities include all the necessary steps to bring the facility's components to a safe, chemically stable condition, such that they do not present a risk to people, wildlife or the environment due to their cyanide content.

The conceptual plan for Decommissioning of Cyanide Facilities, dated January 2019, includes a general implementation schedule, which will be refined as Detour approaches the closure period. Decommissioning and reclamation activities for TMA Cell 1 and Cell 2 are scheduled to take place during life of mine, beginning year 2021 and 2031 respectively. Decommissioning activities for TMA Cell 3 are expected to take place over a five-year period following mine closure. Decommissioning of the Process Plant and its ancillary facilities is scheduled to take place in the first three years following mine closure. The Process Plant and associated pumps, piping, vessels, and other ancillary equipment will be dismantled, decontaminated, and removed. Exposed concrete will be decontaminated and demolished to within 1 meter of final ground surface, infilled with Non Acid Generating rock or overburden if needed, and covered with overburden to support revegetation.

Detour has an internal commitment to update the Closure Plan every 5 years, including decommissioning activities. This commitment is included in Section 2.3 of the plan for Decommissioning of Cyanide Facilities, dated January 2019. There is no regulatory requirement to update the plan on a certain frequency, unless there is a material change in the mining facilities.

5.2 Establish an assurance mechanism capable of fully funding cyanide-related decommissioning activities.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 5.2

Describe the basis for this Finding/Deficiencies Identified:

Detour has developed an estimate of the cost to fully fund third party implementation of the cyanide-related decommissioning measures as identified in the decommissioning plan. The estimated closure cost in the 2016 closure plan was estimated in CAD$ 98 million, including decommissioning activities. The closure cost estimate in the 2019 closure plan is in the order of CAD$ 155 million.

The SRK Technical Memorandum dated January 2019 "Detour Lake Mine Buildings Demolition Cost Estimate 2018 Update" includes demolition and decontamination cost estimates for tanks, pipes, pumps, tailings pipelines, water pumping costs, among others, using third party unit rates. Decommissioning costs for cyanide facilities is estimated at CAD$ 10-12 million and includes tanks cutting and demolition, demolition of buildings, decontamination, disposal of debris, removal of contaminated equipment, removal of unused chemicals, shipment of residual contaminated soils, removal of tailings pipeline, among others.

Detour has an internal commitment to update the Closure Plan and costs estimates, including decommissioning activities, every 5 years, or more frequently if there are material changes to the mine facilities. There is no regulatory requirement to update the plan on a certain frequency, unless there is a material change in the mining facilities. In addition, Detour Lake Mine updates on a quarterly basis its Asset Retirement Obligation (ARO) cost estimate, including cyanide facilities decommissioning costs, which is reported to and audited by the Detour Corporate Office Financial area.

Detour has delivered to the Ministry of Northern Development and Mines of Ontario an Irrevocable Standby Letter of Credit issued by the Bank of Montreal dated December 20, 2012 for CAD$ 28.26 million. This letter of credit is automatically extended from year to year. Also, Detour has established a closure plan performance bond, Bond # M220468, for CAD$ 20.14 million. Both financial mechanisms add up to CAD$ 48.4 million and are based on the 2016 Closure Plan. As mentioned in 5.1, the 2016 Closure Plan does not include requirements of the Cyanide Code and as such, it does not include references on decommissioning activities that will be conducted. As such, the decommissioning of cyanide facilities are not covered by the current financial mechanism for closure. The amount of these financial mechanisms will be updated once the 2019 Closure Plan, including decommissioning of cyanide facilities, is approved by the authorities of Ontario.

6. WORKER SAFETY: Protect workers' health and safety from exposure to cyanide.

Standards of Practice

6.1 Identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce and control them.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 6.1

Describe the basis for the Finding/Deficiencies Identified:

Detour has Standard Operating Procedures (SOPs), plans and manuals for operations that describe the management and operation of cyanide facilities to help minimize the possibility of worker exposure to cyanide. The SOPs, plans and manuals have been developed for the cyanide mixing and storage area, mill areas where cyanide is in use, the detox circuit, and the tailings management area (TMA). They provide detailed information for the risks involved with each task (including preparation, plant operations, entry into confined spaces, and equipment decontamination) and adequately describe safe work practices.

The SOPs detail task specific Personal Protective Equipment (PPE) requirements, potential physical and chemical hazards associated with the job, tools required to complete the job, and step by step instructions, including drawings and/or photographs. Verification of the written procedures included review of the specific task, plans and worker interviews, as well as job task observations. Detour has developed approximately 28 procedures related to cyanide management. Procedures were reviewed and found to be sufficiently detailed to enable safe operation and to minimize worker exposure.

Detour has established minimum requirements for entry into the mill building. These requirements are posted at each entrance and include a hard hat with reflective striping, safety glasses, safety boots, Class 3 high visibility reflective clothing, gloves, and hearing protection. In addition, each SOP details the specific PPE requirements to complete the work. Cyanide related tasks, such as cyanide mixing, work in the ILR area, or maintenance of cyanide systems require the use of a full faced respirator with protective covers for chemical splash resistance, rubber chemical boots, a chemical resistant suit with hood, and rubber chemical gloves in addition to hearing protection and hard hat use which are also required. The procedures also address the pre-work inspection requirements, such as inspection and testing of the eyewash and safety showers.

For entry to the cyanide mix area or ILR, PPE must be verified by security prior to entry. The equipment is checked for proper donning and verification that all required equipment is in use. The area is monitored by a dedicated security person until the task is complete. Positive radio contact is made every five minutes during the work to ensure the wellbeing of all personnel in the area.

If a change or modification is required, Detour has several methods of determining the requirements for implementing the change. Any task which is deemed as non-routine must undergo a non-routine hazardous task analysis (NRHTA). Operations, maintenance, safety, and other groups participate in evaluating the proposed task and identifying any potential impacts to health and safety or the environment, as well as the protective measures necessary to complete the task. Significant changes undergo the site's Management of Change (MOC) process. A formal MOC procedure is in place and used extensively at Detour. Changes may be referred to the Business Improvement or Capital Projects groups, depending on the nature and cost associated with the change.

Detour considers worker input into the development of procedures through various mechanisms and encourages an open-door policy for employees to provide input into operations including health and safety matters. Detour also supports a Joint Health & Safety (JH&S) committee, comprised of employees from various departments and backgrounds across the mine. Procedure revisions require approval by at least one member of the JH&S, among others.

6.2 Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

The operation is: ■ in full compliance

☐ in substantial compliance
☐ not in compliance with Standard of Practice 6.2

Describe the basis for the Finding/Deficiencies Identified:

Detour has determined the appropriate pH for limiting the generation of HCN gas during cyanide mix and production activities. The operational procedure PPO-SOP-10.1.6-Mixing Sodium Cyanide requires a pH greater than 11 in the cyanide mixing tank prior to beginning the mix process. The sodium cyanide solution reaches a minimum pH of 11.7 prior to transfer to the distribution tank. The leach circuit requires a minimum pH of 10.5 in the process solution, which is measured at the pre-leach thickener.

Detour has identified the areas where workers may be exposed to cyanide more than 10 parts per million on an instantaneous basis and 4.7 parts per million continuously over an 8-hour period. HCN levels are monitored in the field and on the HMI through the use of 25 fixed position monitors, including 8 Boreal Lasers and 17 MSA Ultima X Series Gas Monitors. These sensors are mounted in all areas of the plant in which HCN exposures are possible, including the SAG Mills, ILR, trash screens, leach tanks, tails pump box, CIP, carbon screens, sumps, the strip vessel, barren solution tank, electrowinning, and the cyanide destruction circuit. The site also uses ISC GasBadge Pro personal detectors, as well as the ISC MX6 Multi-gas Instrument for HCN detection.

The units are fitted with a visual alarm comprised of a red flashing strobe and an audible alarm at the sensor location. The monitor will also trigger an alarm on the HMI, notifying the control room operator. If ambient HCN concentrations above 2.4 ppm are detected, the red light is activated. The red light flashes and the audible alarm sounds if HCN levels exceed 4.7 ppm. HCN levels are displayed at the front of the unit and on monitors within the main control room. Standard operating procedure PPO-SOP 1.6.2 – Responding to Detection of High HCN Gas and/or Cyanide Solution Leaks requires that in the event of a stationary alarm being triggered at levels at or above 2.5 ppm, but below 4.7 ppm, a handheld monitor is used to confirm the reading and/or determine the source of the HCN gas. Where HCN levels exceed 4.7 ppm, which is below the action level of 10 ppm HCN under the Code on an instantaneous basis, it requires evacuation of the area, with barricades set up in a perimeter of at least 5 meters. If area access is required, it must be approved by management and only trained and authorized personnel may enter the area and must be under supplied air. If HCN is measured in excess of 25 ppm on two or more personal and/or stationary monitors, the plant is evacuated.

Portable HCN meters are provided and made available for use in areas where there is a potential for HCN exposure. Fixed HCN monitors are located at the SAG Mills, ILR, trash screens, leach tanks, tails pump box, CIP, carbon screens, sumps, the strip vessel, barren solution tank, electrowinning, and the cyanide destruction circuit.

Hydrogen cyanide monitoring equipment is maintained, tested and calibrated as directed by the manufacturer, and records are retained. The Electrical and Instrumentation (E&I) group is responsible for the calibration of the fixed HCN monitors. Calibration is conducted on a semi-monthly basis in accordance with manufacturer's instructions for the MSA units and every six

months for the Boreal Lasers. The maintenance program SAP automatically generates a work order for the calibration reminder. Each GasBadge Pro is bump tested prior to use in the field. Detour also has multiple MX6 units on site. The MX6 units are docked and calibrated automatically, with Industrial Scientific monitoring both the GasBadge Pro and MX6 units, as well as calibration gas tank levels via a network connection to their iNet system.

As cyanide can be present throughout the process facilities, warning signs are posted at all entrances to the mill advising workers that cyanide is present and advises of the hazards for both sodium cyanide and hydrogen cyanide. Signs did indicate the necessary, suitable personal protective equipment that must be worn. The signs are in English, which is the language of the workforce. The PPE requirements are also posted in each area.

Detour is using red colorant dye on high strength cyanide solutions, as supplied by Chemours.

Detour has installed showers, eye wash stations and fire extinguishers at strategic locations throughout the operation in all areas where there is a potential for exposure to cyanide. Additionally, 1L. bottles of eye wash solution are located at key locations throughout the mill area and are regularly checked for condition and expiration date as part of routine inspections. Showers and eye wash stations are inspected and tested weekly at a minimum or prior to beginning tasks that have the potential for cyanide exposure. Fire extinguishers are inspected monthly. Fire extinguishers also undergo annual inspections and testing.

The four leach galleries were found to have only fire extinguishers and various means of eyewash, including portable bottles, as well as standalone reservoirs. No safety showers were present in the area. A combination shower/eyewash station was located inside the mill building, between each pair of leach trains, however, the distance of approximately 100m coupled with multiple elevation changes, including traversing stairs to access the shower were deemed insufficient for an area where concentrated cyanide is added to the process. Detour took prompt action with a project for the installation of multiple self-contained combination safety showers and eyewash stations on each leach train, eliminating the risk to the health and safety of personnel. These units were added to the routine inspection and testing program and as such are deemed adequate by the auditors, based on the evidence provided by Detour to serve as verification of installation. As such, Detour is in Full Compliance with the Code.

The operation has identified tanks and pipes that contain cyanide solution to alert workers of their contents. Pipes containing cyanide are labeled as containing cyanide solution and flow direction is indicated. In addition to labels and flow direction markers, concentrated cyanide lines are painted purple for ease of identification. Cyanide storage and process tanks are marked as containing cyanide. Verification was by visual inspection. Auditors followed the cyanide solution circuit from the cyanide mixing area through the mill circuits.

Detour has available Safety Data Sheets (SDS) and first aids procedures in all areas where cyanide is managed. AII information relating to cyanide management including SDS information, SOPS and emergency response plans are provided in English, the workforce language at the site. Electronic safety data sheets are accessible to all staff from computers located throughout the facility using the online system and which all staff are trained to use.

Incidents, occupational injuries, occurrences of property damage, loss to process and near misses are recorded onto an online reporting system. Reporting is required immediately on occurrence to a supervisor. Initial written reporting is required to be complete by shift end. The incident report is submitted through the online system, with First Alert incident notification automatically distributed if the requisite criteria are met. All area supervisors receive alerts to any incident logged into the system.

There have been no health or safety cyanide related incidents reported since 2017.

6.3 Develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 6.3

Summarize the basis for this Finding/Deficiencies Identified:

Detour has an adequate number of antidote kits, water, oxygen, resuscitators (bag valve masks), radios, telephones, and alarms in the process plant and clinic. Kits containing oxygen bottles, resuscitators, basic items required for CPR are located in strategic places at the process plant where reagent grade cyanide is present. The kits are sealed with a breakaway security seal to help ensure that the kit has not been tampered with since its last monthly inspection. Self-contained breathing apparatuses (SCBAs) were located in an easily accessible location in the plant for quick access by emergency responders. Additional SCBAs were available in the hazmat response trailer and the emergency response building and vehicles. The locations of the emergency equipment were deemed to be appropriate for the operation.

First aid equipment is checked regularly by operations personnel, prior to undertaking high risk tasks, such as entering the cyanide mix area or the ILR area. Since the kits are sealed by security, operations personnel verify that the kit is present and that the seal is unbroken. Security personnel perform daily checks to verify that the oxygen kits are present. Each kit has a bar code, which is scanned and electronically logged to verify the inspection. Cyanide antidote kits are also inspected monthly to confirm that the kits are accounted for and that they have not expired. Cyanide antidote kits include the expiration date and are appropriately located within temperature-controlled locations, per the manufacturer's recommendations. Operations personnel inspect fire extinguishers and safety showers/eyewash stations, as described above.

Detour has an Incident Management Plan (IMP) specific to their operations. The IMP includes communication roles and responsibilities, evacuation procedures, required notifications, reporting procedures, incident categories and risk assessment. The IMP specifically address emergency response procedures related to cyanide releases and cyanide exposures.

Detour has its own onsite capability to provide first aid and medical assistance to workers exposed to cyanide. The mine has a fully staffed emergency response team (ERT). The team is comprised of approximately 54 members, covering all rotations and shifts. They train year-round. Training includes first responder/first aid with CPR/AED training, HAZMAT training, confined space rescue, firefighting, and technical rescue (extrication, ropes, etc.). Two physician's assistants (PA) also form part of the ERT and provide fulltime coverage in the medical clinic.

If a cyanide exposure victim requires medical attention beyond the capabilities of the on-site medical facilities, Detour has several options for offsite treatment. The rescue truck maintained at the site will transport the victim(s) toward Cochrane for intercept by Cochrane Emergency Medical Services (EMS) if the patient is determined to be stable enough for ground transport or if air transport is not available. Detour also has a certified helipad and an agreement with Ornge Air Ambulance for air and critical care transport. Detour also has a mutual aid agreement with Cochrane Fire in the event that additional fire or rescue services are required at site.

Detour has formalized arrangements with the local hospital in Cochrane. In the event of a cyanide exposure emergency and the need to transfer a patient to the hospital, as noted above, the PA will treat the patient on site and then go with the patient to the hospital. Ground transports will first be to Cochrane, where an additional cyanide antidote kit is maintained, and staff are trained in treatment of cyanide exposures. If transport is by air, patients will be treated at Timmins District Hospital (TDH).

In 2017 and 2018, Detour completed one major mock emergency drill each year. One incident involved a simulated vehicle accident involving an ISO Container releasing cyanide. A second scenario involved an employee down near the cyanide mix area from HCN exposure. Detour implemented a schedule to perform bi-annual emergency drills beginning in 2019. Drills are developed to include a variety of locations and scenarios including environmental release and exposure responses. Drills are developed in advance and risk assessed to minimize potential impact of event unpreparedness. The files included timestamped, detailed incident minutes of the response actions, a detailed and timestamped radio call log, a thorough debrief, and documentation of lessons learned with input from all participants. One of the lessons learned in the 2018 drill led to a number of changes regarding Hazmat decontamination equipment and procedures to improve the ERT response.

7. EMERGENCY RESPONSE: Protect communities and the environment through the development of emergency response strategies and capabilities.

Standards of Practice

7.1 Prepare detailed emergency response plans for potential cyanide releases.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 7.1

Describe the basis for the Finding/Deficiencies Identified:

Detour has an Incident Management Plan (IMP), which includes the Cyanide Emergency Response Plan, and the tailings OMS, and that sets out emergency response procedures for the entire mine site including cyanide releases. Procedures for initial response, first aid and spill response, and reporting are provided in the IMP.

The IMP and its sub components noted above consider different scenarios appropriate to the site-specific circumstances and includes procedures to respond to emergency incidents including cyanide releases. Emergency scenarios considered include releases during transportation, fires and explosions; pipe, valve and tank ruptures; overtopping of ponds; power outages and pump failures; uncontrolled seepage; failure of cyanide treatment, destruction or recovery systems; and failure of tailings impoundments.

In addition to the IMP, further guidance is provided within the OMS, which provides specific procedures and guidance in the event of emergency situations and failures involving the TMA. The OMS considers specific scenarios such as earthquakes, excessive spillway flows, embankment overtopping, excessive seepage, embankment failures and cracking, embankment movement, sinkholes, and instrument readings.

An agreement between Detour and their cyanide supplier Chemours is in place, whereby the Chemours and their transporters are responsible for shipping of cyanide to site. This responsibility extends to consideration of transport routes, storage and packaging of sodium cyanide briquettes, the condition of transport vehicles and response in the event of an emergency or release during transport. As noted above, Chemours supply chain was certified compliant with the Code during the most recent audit.

The IMP describes specific response actions. In the event of an emergency involving cyanide release, the IMP, Cyanide Emergency Response Plan, and OMS provide for specific actions to be undertaken in the event of a release scenario. The IMP details responses specific to cyanide spills or leaks including mill solution and reagent spills and makes provision for initial response, first aid, spill reporting contacts and spill control and cleanup. The OMS provides specific procedures related to the Tailings Management Area. Any potential emergency that has the potential to affect a community will trigger the notification requirements outlined in Incident Communications Plan.

7.2 Involve site personnel and stakeholders in the planning process.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 7.2

Describe the basis for the Finding/Deficiencies Identified:

Detour involves its workforce and stakeholders in the cyanide emergency response planning. Site personnel participated in the creation of the IMP and the Cyanide Emergency Response Plan. Detour also utilized input from Chemours in plan development, as well as in presentations to the community. During training of the ERT and after emergency mock drills, the workforce has opportunity to provide feedback.

Detour is located approximately 187 km from the nearest town of Cochrane and cyanide is transported to site in a solid form in ISO containers. Despite the remote location and low risk of an event affecting the community, Detour has engaged with the town to provide information on mine activities, leveraged Chemours to provide additional information to potentially affected parties, and regularly coordinates with local emergency services who would support Detour or Chemours in the event of an emergency, depending on the location of the incident. The town of Cochrane was included in the detailed route analysis for delivery as well.

Annual meetings with the various First Nations groups also take place as a joint exercise, or individually, if required, so that information can be conveyed from Detour and so that the participants may engage with mine personnel about all aspects of the operation, including the use of cyanide.

Periodic meetings are held with the Cochrane Fire Department to discuss emergency response planning. Detour has a formal agreement for Cochrane Fire Department to provide mutual aid assistance in terms of personnel, including four firefighters and one officer to be transported by Detour's means and at their expense, as well as compensation for the dispatching of personnel. The responders will provide their own personal protective equipment, but the need for specialty equipment, such as an SCBA, will be by Detour.

The operation engages in consultation with relevant stakeholders to keep the IMP updated. The ERT has emergency training monthly at a minimum, as well as specific refresher training as required for various responder certifications. Periodic meetings and training exercises are held with Cochrane Fire to discuss emergency response planning. Any updates on the IMP or any other relevant procedures are provided.

7.3 Designate appropriate personnel and commit necessary equipment and resources for emergency response.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 7.3

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Describe the basis for the Finding/Deficiencies Identified:

The IMP provides primary and alternate contact details for the incident management team members, including the General Manager who has authority to ensure that sufficient and adequate resources are allocated to carry out the IMP.

Contact information in the IMP includes call-out procedures and 24-hour contact information for the Incident Management Team and the ERT. The site's personnel management software also tracks room assignments and phone numbers and can be used to contact ERT members in an emergency. Radios are available for 24-hour communications, as are the ERT pagers.

The ERT Team Roles, Responsibilities, and Minimum Requirements are documented within the IMP, including training requirements for the ERT, and it is the responsibility to the ERT Coordinators to ensure that training is provided and maintained. All responders undergo the same training.

Emergency response equipment lists including the locations of cyanide antidote kits are provided in ERT-SOP-004–Equipment Inspections, in ENV-SOP-006–Cyanide Emergency Response Plan, and the IMP.

The cyanide emergency response equipment is checked regularly by Security and records are retained for a minimum of 3 years. ERT members check other emergency response equipment according to a predetermined schedule. Equipment is also inspected on by the ERT and during training sessions, and by operations personnel prior to beginning work in cyanide areas.

Emergency response planning requirements have been confirmed with Lady Minto Hospital in Cochrane and the hospital in Timmins by means of regular communications and cyanide antidote kit training. In addition, Cochrane Fire is part of the Emergency Response Plan and has been recorded in a Mutual Aid Agreement. Outside entities are engaged regularly and included in mock drills, as appropriate.

7.4 Develop procedures for internal and external emergency notification and reporting.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 7.4

Describe the basis for the Finding/Deficiencies Identified:

The Incident Communications Plan, the Cyanide Emergency Response Plan, and the Hazardous Material Decontamination and Transportation Procedure within the overall IMP provide communication requirements and procedures. The IMP addresses contact requirements for public communications, employee communications, regulatory contacts, contact information for response assistance from local assets, as well as through Chemours, First Nations contacts, among others.

Among other responsibilities, the Crisis Management Team Leader coordinates overall crisis management during an emergency. The Manager of Communications is responsible for overall communications and is the link between the onsite Incident Commander and the Crisis Management Team Leader. The Manager of Communications will also prepare responses to

media inquiries, with the appropriate spokesperson designated to deliver appropriate messaging. The Director of Sustainability is the point of contact for First Nations communications. The Emergency Response Team Coordinator advises when mutual aid assistance is required. Appropriate subject matter experts provide consultation related to emergencies where technical expertise relevant to the incident is required.

The IMP contains procedures for communication including emergency response contact information. In the event of an incident, the Crisis Management Team in consultation with the Incident Command Team, will notify affected parties in local communities, as necessary. Procedures for notifying outside agencies and the media are provided in the IMP.

7.5 Incorporate into response plans monitoring elements and remediation measures that account for the additional hazards of using cyanide treatment chemicals.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 7.5

Describe the basis for the Finding/Deficiencies Identified:

The IMP provides procedures in the event of cyanide release and addresses cyanide recovery and remediation if necessary. Section 12 of ENV-PLN-006-Cyanide Emergency Response Plan details the requirements for sampling and disposal of any contaminated material from a cyanide release. The plan requires that any cyanide containing solutions spilled within the process area but outside of containment be cleaned up with an appropriate vacuum truck with the contents disposed of in the TMA.

Treatment with chemicals for neutralization or decontamination is not included in Detour's response procedures. Rather, cyanide impacted soils are to be excavated to depth of impact and all contaminated material deposited into the TMA until cyanide levels in the impacted area are below 0.051 µg/g total cyanide.

Drinking water is prepared through onsite generation of potable water. In the event of an emergency, potable water could be trucked to site, if necessary.

The Cyanide Emergency Response Plan prohibits the use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat any cyanide that would have been released into surface water.

The Cyanide Emergency Response Plan details the requirements for sampling and disposal of any contaminated material from a cyanide release. This document outlines procedures for validation sampling of any cleanup or remediation measures in the event of a cyanide release. The sampling location, methodology, including quantity and number, and other considerations are also specified depending on the areas of impact.

For process solution spills, the plan requires operators to immediately stop the release of material, if safe to do so, and notify the Area Supervisor and the Environmental, Health and Safety Superintendent. The procedure requires that the time of spill is noted. Samples are collected and sent RUSH to a third-party laboratory for analyses. Guidance for assessing the area of impact on a mill map is provided. Final post-cleanup sampling results are indicated in the plan.

7.6 Periodically evaluate response procedures and capabilities and revise them as needed.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 7.6

Describe the basis for the Finding/Deficiencies Identified:

Detour reviews and evaluates all components of the IMP annually, at a minimum, or more frequently if required, including the cyanide related elements of the IMP. The reviews involve all affected parties, such as operations, environmental, health and safety, emergency response, communications, and all others as required. The plan and its components require a formal signoff by the area responsible party or their delegate for each update. The Mine General Manager is also a required reviewer for the IMP.

In 2017 and 2018, Detour completed one major mock emergency drill each year. One incident involved a simulated vehicle accident involving an ISO Container releasing cyanide. A second scenario involved an employee down near the cyanide mix area from HCN exposure. Detour implemented a schedule to perform bi-annual emergency drills beginning in 2019. Drills are developed to include a variety of locations and scenarios including environmental release and exposure responses.

The mock scenarios contained detailed inputs with a detailed review carried out during the post-incident debriefing session. Any necessary changes to management systems or new training requirements based on document changes are implemented. Notes and action items are captured in the ERT Debrief Form and in the Incident Management Team (IMT) Performance Review Meeting Notes.

The ERT members regularly attend additional training sessions, which include mock scenarios related to cyanide exposure. During such events, refresher training on the symptoms of cyanide poisoning is provided including scenarios of patient's vital signs. Observations of the performance of ERT members are made by the Emergency Response Coordinators and opportunities for improvement are documented and included in subsequent training.

The IMP is reviewed and updated annually, at a minimum, or as necessary if changes are required or if events warrant review and update. In 2017, a major revision to the IMP was undertaken with implementation in its current form. Since that time, the plan has been reviewed and updated multiple times as additional information is added or if improvements can be made.

The evolution of the document, including specific changes between versions, were reviewed by the auditors. No cyanide related incidents or releases have occurred since 2017 that would require implementation of the IMP.

ERT training exercises and mock drills were debriefed to identify and document improvement opportunities.

8. TRAINING: Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner.

Standards of Practice

8.1 Train workers to understand the hazards associated with cyanide use.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 8.1

Describe the basis for the Finding/Deficiencies Identified:

New workers at the mine receive detailed orientation training. Workers typically receive approximately 96 hours of training prior to receiving in-plant training. Initial cyanide hazard recognition training and initial cyanide release training are included in the orientation. Upon completing orientation, personnel also receive detailed cyanide related initial task training, which includes task specific hazards.

Contractors working at site must also undergo site induction training, which includes cyanide hazard training.

Annual cyanide hazard recognition refresher training, cyanide related task training, and cyanide release training are provided to all employees who may be exposed to cyanide. Training is approximately 2-1/2 hours long and is conducted by the training department. Training includes properties of cyanide; hazards of cyanide; symptoms of cyanide exposure; emergency response; and first aid, including use of oxygen. The training includes a written test.

Training records, including all initial and subsequent refresher cyanide hazard training for mill operations are retained electronically in Success Factors in the form of scanned copies of the training records. ERT member records for cyanide hazard training are recorded in Success Factors, and other emergency response training records and certifications are stored electronically on the network and in hard copy in the ERT offices. Employee hard copy training records that were utilized prior to implementation of Success Factors are also retained by the site, with records dating back to site startup. These hard copy records have been digitized and added to Success Factors.

8.2 Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 8.2

Describe the basis for the Finding/Deficiencies Identified:

New process employees and any worker with cyanide related tasks receives approximately 96 hours of specific Mill Orientation training, which includes elements specific to the use of cyanide in the process. Employee specific training includes aspects such as cyanide awareness, response, process information, hydrogen cyanide monitor and alarm operation, and location of cyanide safety equipment. This training directs staff to relevant standard operating procedures. The cyanide training presentation includes key information regarding symptoms of cyanide poisoning and first aid for cyanide poisoning training, as well as facts about sodium cyanide.

After completing this training, area/task specific training is provided by the Process Trainer and Supervisors on operating procedures including both general procedures applicable to all areas as well as those specific to a task. Employees perform work with supervision for an average of 1,000 hours prior to being allowed to work on their own. Regular Job Task Observations are completed to ensure the employee understands and is executing tasks according to procedure. Also, in order to conduct work on their own, employees must pass a circuit test, which includes both a written and field component, meant to demonstrate an employee's mastery of the circuit.

Standard operating procedures define the steps required to complete a task and the SOP itself is provided as training material with sign off required from both the Process Trainer and the trainee for all relevant SOP's for a given training module. Training elements required for each module are recorded on a training verification form that is maintained by the Process Trainer until complete. The completed training records are recorded in Success Factors.

Training on specific tasks is provided by the Process Trainer and relevant supervisors or their delegates, who may be qualified operators under the supervision of the trainer. Supervisors are considered qualified to provide training based on experience. The trainers undergo "train the trainer" programs to ensure that they are qualified to provide training to others. This includes a combination of approximately two months of training by internal resources, as well as specialty module training required by the Ministry of Colleges and Universities (MTCU) in Ontario. Trainers are not required to be signed off as operators to be qualified as trainers. In the event that the trainer is not an operator, qualified operators assist in field training and verification as peer trainers. This requirement was verified by discussion with the Process Trainer and review of trainer records.

AII new employees are trained to receive a minimum specified level of site orientation before being allowed to operate onsite. Training includes cyanide awareness training and, for those that will be working within the Mill, orientation on the process areas, cyanide alarms and monitors,

first aid and use of cyanide safety equipment. In addition, all employees must complete general and specific task training before being allowed to work alone.

Annual refresher training is provided specifically on cyanide management as follows: physical and chemical characteristics of cyanide, cyanide handling, monitoring, control of pH levels, exposure limits, exposure symptoms, PPE, treatment, rescue equipment, safety showers, emergency warning systems, evacuation, disposal and spill procedures.

Following new hire orientation and cyanide refresher training, employees complete a written exam to demonstrate understanding of the material. Practical field verification tests of understanding are undertaken for task training as well as signing the relevant standard operating procedure for each training module to indicate understanding.

Employee activities and task competence is further verified and subsequently monitored with the use of Job Task Observations (JTOs). Completion of JTOs is a key performance indicator (KPI) for supervisor performance reviews, and they are tracked monthly. Supervisors also use JTO's as an opportunity to provide feedback to the employee(s) being observed.

Training records are retained throughout employment history. Training records are retained electronically by the training department in Success Factors. This includes new hire orientation, cyanide hazard recognition training, cyanide refresher training, and all specific task training records. Training records contain the date, subject covered and are signed by both the trainer and trainee. Written and practical tests are completed to demonstrate the employees understanding of the training materials. Human resources (HR) retains the hard copy records for employee training prior to implementation of Success Factors.

Contractor training records are retained by NORCAT, the third-party service provider responsible for the training.

8.3 Train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 8.3

Describe the basis for the Finding/Deficiencies Identified:

All operators within the Mill, which includes cyanide unloading, mixing, production and maintenance personnel, are provided with site and task specific hazard training including cyanide awareness, hydrogen cyanide monitoring, emergency response, recognition of cyanide exposure symptoms, cyanide exposure first aid, the role and operation of rescue equipment, and actions to be taken in the event of a cyanide spill, including sampling.

Cyanide awareness training to workers includes actions to take in the event of a cyanide spill. Training also covers spill reporting and disposal procedures. Employees who are actively working with cyanide are trained on procedures for Mixing Cyanide and Spill Handling and Response. Management and response personnel complete regular training drills involving cyanide, portraying both environmental releases and medical emergencies related to cyanide.

Detour has an Emergency Response Team (ERT) on site, which is formed by personnel from different areas of the mine. ERT members are formally trained in various aspects of emergency response, in cyanide specific response, and through participation in mock drills as well as formal training programs. Emergency responders are available on all shifts. Emergency Response Coordinators, Captains, and Vice-Captains are also trained on how to react in emergencies situations, including cyanide related events. All responders undergo the same training.

Emergency Response Team Members attend regularly scheduled training sessions, during which cyanide exposure and emergency response topics are covered. Formal cyanide related annual refresher training is also provided to all ERT members. Training sessions include the use and inspection of response equipment. Sessions are documented with sign in sheets for all participants, including the date and topic covered.

Detour has communicated the Emergency Response Plan with management of the Lady Minto Hospital in Cochrane and the hospital in Timmins. Regular communications are held with the hospital facilities, during which cyanide emergency and response arrangements are discussed, including decontamination and transport procedures, the treatment protocol for cyanide exposure, and the onsite cyanide antidote kits. In addition, the mine has a Mutual Aid Agreement with Cochrane Fire whereby emergency response services are provided. In the event of a medical evacuation from site, ground response is by Cochrane EMS and air response is coordinated and executed by Ornge Air Ambulance.

Refresher training is provided annually, at a minimum, to employees and includes response to cyanide exposures and response to releases. The ERT completes regular monthly training sessions including recognition of cyanide exposure, treatment, and first aid.

In 2017 and 2018, Detour completed one major mock emergency drill each year. One incident involved a simulated vehicle accident involving an ISO Container releasing cyanide. A second scenario involved an employee down near the cyanide mix area from HCN exposure. Detour implemented a schedule to perform bi-annual emergency drills beginning in 2019. Drills are developed to include a variety of locations and scenarios including environmental release and exposure responses. Drills are developed in advance and risk assessed to minimize potential impact of event unpreparedness. Scenario based ERT specific training involving cyanide is also conducted periodically.

Cyanide related emergency drills involving the ERT are carried out periodically with the performance of team members evaluated as part of the exercise. The procedures require Detour to review and assess performance during emergency situations or during drill scenarios, to test effectiveness, identify weaknesses, improve the emergency response program, provide tracking for deficiencies and minimize environmental impacts. Observations are recorded on an ERT

Debrief Form and in the IMT Performance Review Meeting Notes with opportunities for improvement tracked and included in subsequent training events.

Training records for all employees are recorded and retained in Success Factors, including cyanide training records. In addition, ERT member hard copy training records for ERT specific training are maintained electronically and in hard copy at the ERT office.

9. DIALOGUE: Engage in public consultation and disclosure.

Standards of Practice

9.1 Provide stakeholders the opportunity to communicate issues of concern.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 9.1

Describe the basis for the Finding/Deficiencies Identified:

The Detour website has contact information that is monitored Monday through Friday for public comments via email, phone, etc. Office locations and email addresses are available to the public. Detour social media platforms are monitored regularly, offering additional means for public communication and feedback. Quick links to social media accounts are located on company website.

Detour produced a cyanide (Code) fact sheet which has been used at open house sessions for the public. A poster board presented the fact sheet information and handouts were made available. The fact sheet is also used for meetings with the First Nations partners and by human resources for job fairs and at the Canadian mining exposition in Timmins.

Detour uses a variety of mechanisms to provide opportunities for stakeholders to communicate their concerns related to cyanide management, including reports, meetings, public engagements and tours to the mine site.

Detour has formal Impact Benefits Agreements (IBA) with three First Nations groups, including the Moose Cree First Nation, the Taykwa Tagamou Nation, and the Wahgoshig First Nation. These commitments were put into place in November 2012, ahead of startup. The site has also engaged the Métis Nation of Ontario (Timmins). The commitments are reviewed with each of the First Nations groups periodically to verify that Detour is meeting the requirements under the agreement and determine if any gaps exist.

The majority of the stakeholder engagement for Detour is with First Nations partners. There are no nearby communities in the immediate area. Cochrane is the nearest community, which houses a Detour office and the bus terminal for employee transportation to site. The primary

concern by the area First Nations is preservation of the area for traditional land uses, such as hunting, fishing, trapping, etc.

Representatives from the respective communities periodically gather to discuss any environmental related concerns, such as water management, wildlife protection, etc. Regular meetings are held in an open forum with a formal agenda and are coordinated by Detour. The communities may or may not elect to participate, with one First Nations group preferring direct, one on one engagement with Detour rather than working with the other three groups.

The Impact Benefits Agreements established an Indigenous Affairs group consisting of three environmental coordinators working on community employment, business development, and cultural interaction and training. These members provide an additional open door for contact between stakeholders and the site, in addition to the environmental monitors noted above.

Stakeholders are heavily involved in permit review processes. The IBA establishes a means for Detour to provide financial support for technical experts to review permit submittals on behalf of each of the First Nations groups. Each group has 30 business days to review a permit submittal, and Detour has to provide proof of engagement to address concerns before permit approval by the regulatory authorities.

Each year, Detour makes an allowance for the First Nations groups to come to site for a tour. The focus of the tour changes each year, moving from the process plant to the mine, the tails facility, etc. Detour provides dinner, the tour, and an opportunity for interaction with an open forum question and answer session. Other site engagements occur, as requested.

The Follow-up Program (FUP) annual reports are required as a condition of the sites permits and the environmental impact assessment. A summary of all monitoring activities is included in the report. The report is distributed to all community partners and regulators, as well as being posted on Detour's website. Detour meets annually in Cochrane for a presentation on the Annual Report. A site tour follows the presentation. Key information presented includes cyanide information, such as efforts related to certification under the Code, monitoring data, spills, wildlife interactions, etc.

9.2 Initiate dialogue describing cyanide management procedures and responsively address identified concerns.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 9.2

Describe the basis for the Finding/Deficiencies Identified:

Detour utilizes the same mechanisms described in 9.1 as opportunities to interact with stakeholders and provide them with information regarding cyanide management practices and procedures.

Open house meetings are offered to the public including schools, universities, regulators, communities, and other interested parties. During such meetings, mine information including cyanide management is readily made available to attendees, including the cyanide fact sheet noted above, which provides information on the safe use of cyanide.

Cyanide related information provided to employees includes information handouts and hard hat stickers describing the symptoms of cyanide poisoning and first aid measures. The public cyanide fact sheets are also available for employees.

The FUP annual report, which is provided to community partners and regulators, includes information about mining activities and, among other topics, provides information related to cyanide management. Other public presentations to stakeholders include information regarding Detour's commitment to certification under the International Cyanide Management Code. In case of occurrence, this report should include any cyanide incidents related to cyanide management and releases. There were no cyanide related incidents in the last 2 years, but the FUP does note detection of background levels of free cyanide present in several bodies of fresh water, though the levels are below water quality guidelines. Monitoring will continue. During regulator or public visits, this information is made readily available as well as any information requested which pertains to cyanide management at the mine.

9.3 Make appropriate operational and environmental information regarding cyanide available to stakeholders.

The operation is: ■ in full compliance
□ in substantial compliance
□ not in compliance with Standard of Practice 9.3

Describe the basis for the Finding/Deficiencies Identified:

Detour has developed written and visual descriptions of how their activities are conducted and how cyanide is managed and has made these available to communities and other stakeholders. The information is made available and distributed in different engagement opportunities including job fairs, meetings, presentations, conferences, community events, direct distribution to interested parties, among others.

Two serious cyanide related incidents, including one fatality, occurred prior to the initial Cyanide Code certification audit. Information was made publicly available, to the extent possible, regarding these incidents, while protecting the privacy of the individuals.

There have been no cyanide releases on or off the mine site resulting in significant adverse effects to the environment. There have also been no cyanide releases off the mine site requiring response or remediation and no cyanide releases that are or that cause applicable limits for cyanide to be exceeded.

No cyanide related process spills requiring reporting occurred. In case of occurrence, releases would be included in the FUP Annual Report.

In the event that information needs to be made publicly available, Detour will prepare the key messages, statements, and/or press releases for distribution via wire service to local and regional media outlets, post on the website with regular updates, contact employees directly, and issue a final release on the matter.